

REMARKS

Applicants' remarks in the Response filed December 10, 2008 are incorporated herein by reference as though set forth in their entirety.

Reconsideration of the rejections of record and allowance of the application in view of the remarks below and as submitted in the response filed December 10, 2008 are therefore respectfully requested.

Discussion of January 26, 2009 Telephone Interview

Applicants express appreciation for the courtesies extended by Examiner Campbell and Supervisory Examiner Nguyen to Applicants' representatives Arnold Turk and Erica Lin during a January 26, 2009 telephone interview.

During the interview, Applicants' representatives discussed the content of the cited documents used in the rejections set forth in the Final Office Action. The Examiners appeared to allege that the product being disclosed by Masaki was the same as the product recited in Applicants' pending claims. Applicants' representatives, without expressing any agreement with any alleged similarities between products, indicated that a comparison between products was not appropriate because the pending claims are directed to a method. Applicants indicated that the rejection must address the features recited in the method recited in Applicants' claims

Moreover, differences between the cited documents and the pending claims were discussed by Applicants' representatives during the interview, and these discussions are included in the arguments set forth herein.

Response to Art Based Rejections

(a) Claims 1 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakazato (U.S. Patent No. 5,071,785) in view of Masaki et al. (Japanese Patent Publication No. JP09-008124).

(b) Claims 6 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakazato in view of Masaki, further in view of Moriceau (U.S. Patent No. 6,756,285).

Applicants' independent claim 1 is directed to a manufacturing method of a bonded wafer, in which said bonded wafer is manufactured by bonding a wafer for active layer wafer with a supporting wafer, wherein said active layer wafer and said supporting wafer, which are to be bonded together, have fitting surfaces, respectively, for fitting to each other, each of said fitting surfaces comprising a part of a spherical surface having the same curvature; at least either one of said active layer wafer or said supporting wafer are covered with film layers of the same material on the top and the back surfaces thereof, and wherein the film materials of said active layer wafer and said supporting wafer are different from the materials of said active layer wafer and said supporting wafer; and the film thickness on the top surface side is differentiated from the film thickness on the back surface side of said active layer wafer and said supporting wafer, thereby generating a warp in said active layer wafer and said supporting wafer and bonding said fitting surfaces together.

In setting forth the rejection, any combination of documents must include each of the features recited in the method of independent claim 1 as well as the further features recited in the dependent claims.

Applicants submit that the documents are not combinable in the manner set forth by the rejections, and even if for the sake of argument the documents were combined, any combination of the documents would not arrive at Applicants' claimed subject matter.

As stated by the Examiner on page 3 of the Final Office Action, "Nakazato does not explicitly disclose the film thickness on the top surface side is differentiated from the film thickness on the back surface side of said active layer wafer and said supporting wafer, thereby generating a warp in said active layer wafer and said supporting wafer and bonding said fitting surfaces together." The Examiner tries to overcome this lack of an explicit disclosure in Nakazato by alleging on page 2 of the Advisory Action that Nakazato "suggests the concept of using different thicknesses of oxide films covering the top and reverse surfaces of a wafer for warping a pre-bonded wafer." Applicant agrees that Nakazato does not have any such explicit disclosure; however, in contrast to the assertion in the Advisory Action, Nakazato does not provide any teaching or suggestion of Applicants' recited method.

Nakazato discloses using wafers, one of which may be warped prior to forming an oxidation layer (Nakazato, Col. 4, line 67). Nakazato further discloses that the "magnitude of the warp of wafer 1a at the time of bonding depends upon the diameters and the thicknesses of the wafers and also upon the temperature for forming the oxide film and the thicknesses thereof" (Col. 5; lines 2-9; Figure 2) but does not disclose using a difference in film thickness between the back surface side and the top surface side of each respective wafer. Accordingly, Applicants submit that contrary to the assertions within the Final Office Action and the Advisory Action, Nakazato does not disclose using a difference in film thickness between the back surface side and the top surface side of an active layer wafer and a supporting wafer.

Moreover, Nakazato discloses that the thickness of the base wafer is controlling on the extent of warp (Figure 3, Col. 5, lines 53-62). For example, Nakazato states at Col. 5, line 60, "it is known in the figure that the thinner the wafers are, the larger the warps after the formation of oxide film are. Consequently, in case the thicknesses of the wafers are varied, the magnitude of the warps can also be varied accordingly." Further, Nakazato discloses that wherein an oxide film is formed on one side of the wafer, and such a structure is likened to the case of bonded wafers which have an oxide film formed on each wafer for the purpose of producing an SOI structure (as in Masaki), the influence of the thinner wafer 1b on warp can be ignored. Thus, Nakazato expressly teaches away from a thinner wafer having influence on the warp of an entire bonded wafer.

The rejection attempts to overcome the deficiencies of Nakazato by using the disclosure of Masaki, and states in the Advisory Action on page 2 that, "Masaki discloses that it was known at the time the invention was made to use a difference in film thicknesses on a top surface and a bottom surface in order to create a warping."

Initially, Applicants submit that this is an incorrect interpretation of Masaki. A translation of the Abstract of Masaki (as provided by Patent Abstracts of Japan) states, at most, that "a desired amount of warpage can be obtained from the film thickness difference between the film thickness of a buried oxide film and that of an oxide film on the reverse surface." Applicants note that the buried oxide film is not a film thickness on a top surface side. Thus, a film thickness on the top surface side being differentiated from the back surface side of the active layer wafer and supporting wafer is not disclosed by Masaki.

Nonetheless, Applicants submit that Masaki also does not disclose using two wafers such that a film thickness on the top surface side is differentiated from the film thickness on the back

surface side of said active layer wafer and said supporting wafer in accordance with Applicants' claims or the process steps recited in Applicants' claims.

Applicants respectfully submit that there is no basis for combining the disclosure of Masaki with Nakazato, contrary to the Examiner's assertions in the Final Office Action and the Advisory Action. Applicants direct attention to Drawing 4 of Masaki. Applicants respectfully note that this drawing discloses a first and second wafer, wherein an oxide thickness is formed on the front and back side of a first wafer such that the (front side thickness) = (back side thickness) = t_1 , and a second oxide thickness is formed on the front and back side of a second wafer such that the (front side thickness) = (back side thickness) = t_2 , such that $t_1 < t_2$. Accordingly, no difference in thickness between a front side and a back side film of each respective wafer is disclosed by Masaki.

Moreover, even if for the sake of argument the documents were combinable, any such combination would not render obvious the method recited in Applicants' claims because the rejections do not establish that a combination of features from Nakazato and Masaki includes, amongst other features, wafers having fitting surfaces, respectively, for fitting each other, each of said fitting surfaces comprising a part of a spherical surface having the same curvature, and film thickness on the top surface side is differentiated from the film thickness on the back surface side of said active layer wafer and said supporting wafer. Accordingly, Applicants submit that the method of depositing a film in accordance with Masaki, when combined with Nakazato, would not result in a method in accordance with the present claims.

Further, Applicants note that there does not appear any teaching or suggestion in Nakazato either taken alone or in view of the other documents that both a first and second wafer may be warped in the same direction (Col. 5, lines 2-9), that warp of the first and second wafer

should be matched to have fitting surfaces of the same curvature. Thus, even if the combination is maintained, Applicants submit that the rejections do not establish a *prima facie* case of obviousness over Nakazato in view of Masaki and/or further in view of Moriceau.

Accordingly, Applicants submit that for at least the foregoing reasons, the rejections are without appropriate basis and should be withdrawn.

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 6, 14, and 15 and an indication that these claims are allowable.

CONCLUSION

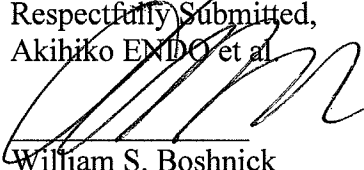
In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejection of record, and allow each of the pending claims.

Applicants therefore once again respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

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